6.0 SUMMARY AND CONCLUSIONS

6.1 1998 RI/FS Summary

The chemical data collected indicated that the majority of media sampled, i.e., groundwater, surface water, surface soil, sediment, and subsurface soil were affected by organic and inorganic contaminants of concern.

Chlorinated VOCs (e.g., trichloroethene, cis-1,2-dichloroethene, vinyl chloride) were detected at concentrations less than 5 ug/L in the septic tank/leach pit water. VOCs were not present in the sludge from the tank/pit samples. This indicated a decrease from the WCHD and NYSDEC investigation events, as this class of VOCs had been present up to 15,000 ug/L in the tank/pit waters and 2,600 ug/kg in the sludge. A decrease of up to 7.2 times and 108 times in concentration of the chlorinated VOCs in surface water and sediments, respectively, was also noted. VOC occurrences were noted up to 18 ug/L (surface water) and 25 ug/kg (sediment). The groundwater beneath the former Magna Metals property contained concentrations of trichloroethene (maximum of 4,700 ug/L) and tetrachloroethene (maximum of 90 ug/L).

PAH constituents were detected in septic tank/leach pit sludge; containing 8 PAHs, at concentrations up to 1,500 ug/kg. In addition, concentrations greater than applicable criteria occurred in 7 of the 11 sediment samples (64 percent) and 1 of the 5 surface soil samples (20 percent). A majority of the maximum sediment concentrations (16 of 18) for this class of compounds occurred at location SD-1 (the drainage culvert). Runoff from nearby Cross Road Avenue may be a contributing factor to the culvert concentrations. Concentrations of PAHs less than 4 ug/L and 160 ug/kg, respectively, were detected in the surface water and subsurface soils.

Metals and cyanide were detected in the water and sludge samples from the tanks/pits. Exceedance concentrations for the inorganics were detected in the tributary (SW-6/SD-6) and wetlands (SW-7/SD-6 and SW-9/SD-9) samples. In addition, the surface soils, subsurface soils and groundwater samples collected downgradient from the tanks/pits contained inorganic exceedance concentrations.

Regarding groundwater, since on-site overburden monitoring wells had exceedances off-site overburden groundwater, on-site bedrock groundwater, and off-site bedrock groundwater, required additional investigation. Additional groundwater investigation was recommended based on exceedances of NYSDEC Water Quality Standards (Class GA) in two of the three downgradient overburden monitoring wells MW-03 and MW-04.

The Ecological Assessment, which incorporated surface soil, sediment, and surface water data, noted the following.

Down-gradient concentrations of the metals aluminum, copper, iron, mercury, zinc, and cyanide exceeded the NYSDEC Water Quality Standards, and selenium exceeded USEPA chronic and acute criteria in the surface water samples. Down-gradient levels of copper, nickel, chromium, and zinc surpassed the NYSDEC severe effect level for sediments. In the down-gradient surface soil samples, aluminum, chromium, copper, selenium, vanadium, and zinc were detected at concentrations that were greater than the screening benchmark concentrations. Concentrations of

aluminum, chromium, selenium, and vanadium were also higher than the screening benchmark concentrations in the background surface soil samples. In addition, levels of PCBs aroclor-1254 and aroclor-1260, and the semi-volatile organic compound di-n-butylphthalate exceeded the screening benchmark concentrations in the down-gradient surface soil samples.

Based upon these results, it was determined that removal of soils in the leach pit source area would eliminate the potential for exposure. These potential exposures were:

- Surface drainage from the site is directed into adjoining wetlands and streams deemed as sensitive environments (including a NYSDEC regulated wetland) supporting ecological receptors. Given that the principal fate and transport mechanism for site-related contaminants is the surface water pathway, the potential for exposure of ecological receptors to site-related contaminants was viable.

- Elevated concentrations of aluminum, chromium, copper, selenium, vanadium, and zinc were associated with on-site surface soils. While present at elevated concentrations, the developed nature of the site (warehouse/office building/parking lot) limits the surface soil exposure pathway for most ecological receptors. However, contaminated soils may function as a potential source for exposing ecological receptors downstream via erosion and runoff into adjoining streams and wetlands.

- Site-related contaminants including aluminum, copper, iron, mercury, zinc, and cyanide were present in surface water at elevated concentrations above background and corresponding acute and chronic AWQC in the adjoining streams and wetlands.

- Site-related contaminants including copper, nickel, chromium, and zinc were present in the sediments at concentrations above background and corresponding low and severe sediment quality criteria in the adjoining streams and wetlands.

A Step IIC Toxic Effects Analysis was recommended, which would focus on the aquatic communities, surface water and sediments of the tributaries and adjoining wetlands to determine if the potential exposure to site-related contaminants were impacting aquatic communities.

6.2 2004 Supplemental RI Summary

The 2004 Supplemental RI noted the following:

Leach Pits/Tanks

- Thirteen leach pits/septic pits had been discovered at the Magna Metals Site. The total number found was greater than anticipated based on NYSDEC and WCHD archival information.

- There appeared to have been two phases of leach pit construction at the site. The first and older set of leach pits is constructed of concrete cinder blocks with apparently a soil or gravel bottom. Leach pits of this construction are ST-02, LP-02, LP-03, LP-04, LP-05, and LP-06A.

- The second and newer set of leach pits is constructed of prefabricated concrete cylinders with perforated sides and apparently soil or gravel bottoms. Leach pits of this construction are LP-06, LP-07, LP-08, LP-0A, and LP-09. It appears that the pipe exiting from LP-06A was abandoned and additional fill material added to the site prior to the construction of the newer set of pits. The newer set of leach pits ties into the older set of pits at leach pit LP-05.

- Sludge or sludge cakes are still present in 12 of the 13 pits at the site. The pits still containing sludge or sludge cake are ST-02, LP-02, LP-03, LP-04, LP-05, LP-06, LP-06A, LP-07, LP-08, LP-0A, and LP-09.

- Based on observations and investigations in the field, fluids flowed from ST-01 to ST-02 to LP-02 to LP-03 to LP-04 to LP-05 to LP-06A. After abandonment of the pipe leading from LP-06A, flow proceeded from LP-05 to LP-06, to LP-07, to LP-08, to LP-0A to LP-09. LP-09 appears to be the end of the leach pit line, as no pipe exits this pit.

Stream and Wetlands

- Based on inorganic analytical results (particularly copper) for the surface water sample collected at location SW-22, groundwater samples collected from monitoring wells MW-04 and MW-04D, and surface soil samples collected downgradient of the leach pit area and the former Magna Metals building (SS-06, SS-07, SS-08, SS-09, SS-10, SS-11, and SS-12) the wetlands east of Furnace Brook and the unnamed tributary are impacted.

- The Step IIC Toxic Effects Analysis confirmed impacts to pelagic and benthic aquatic life were observed in indigenous and laboratory based analyses. The primary environmental media of concern are surface waters and sediments of Furnace Brook, its unnamed tributary, and the palustrine wetlands associated with the site.

In general, concentrations and distributions of contaminant compounds and analytes detected during the 2004 Supplemental RI were consistent with contaminant concentrations and distributions detected and presented in the 1998 RI/FS. The 2004 Supplemental RI analytical results indicate that all media sampled are affected by either organic or inorganic contaminants of concern at concentrations above criteria. In particular, TCE, PAHs, and Metals.

6.3 2006 Data Findings

The 2006 additional investigation included the collection of groundwater samples from existing wells MW-02, MW-03, MW-04, MW-06; installation of two new wells next to the former Magna Metals building, MW-09 and MW-10; and an additional new well, MW-11, approximately 200 feet north of the former Magna Metals building and adjacent to Leach Pit LP-09. Soil vapor samples were also collected from three exterior locations along the western side of the office/warehouse building, five exterior locations within the area containing the leach pits, and one interior sub-slab sample from the building south of the Magna Metals building and the office/warehouse building.

The sampling results indicated that groundwater collected from the two new monitoring wells, MW-9 and MW-10, did not contain contaminants above NYSDEC water quality standards. One hundred and ninety ppb of TCE was detected in well MW-11, located near Leach Pit-09. MW-11 sample groundwater results were consistent with previous data that is, groundwater adjacent to the leach pits is impacted.

Soil gas results indicated a response to a TCE concentration of 59 micrograms per cubic meter in one soil vapor sample (SV-03) that was collected next to the office/warehouse building. The soil gas sample results documented that VOCs were detected at concentrations ranging from 1 to 1,900 micrograms per cubic meter (ug/m^3).

6.4 2007 AKRF Soil Vapor and Indoor Air Investigation Findings

The following results were presented as part of the July 2007 Soil Vapor Investigation Report, AKRF and are presented herein as an overview. No indoor air samples contained TCE above the air guidance value of 5 ug/m^3 in Table 3.1 of the NYSDOH Soil Vapor Intrusion Guidance. Although there was no evidence of exposure to workers at the site based upon the indoor air sampling results, the elevated concentrations of TCE, and to a lesser extent 1.2-DCE and toluene, were detected in the sub-slab soil gas (SV-11 and SV-12) beneath the Polymedco office area. (AKRF, July 2007). For additional detail, please refer to the July 2007 AKRF report.

6.5 RI Completion

Over the course of the RI, several key issues became apparent. These included the following:

(i) locating the source of groundwater contamination.

Sample data from the 1998, 2004 and 2006 reports consistently showed that the source of the groundwater contamination was the former leach pits. Data from the borings and wells installed closest to the former Magna Metals building did not suggest that an additional or larger groundwater plume source is present. Due to the weakened structural nature of the former Magna Metals building, ISCP's consultant was unable to obtain sample data directly below the floor. Therefore, as part of the FS, the alternative addressing leach pit/soil removal will include building demolition and post-demolition confirmation sampling of subsurface conditions. The alternative will include an estimate of quantities and costs for potential removal of soils below the building floor. The FS alternatives will develop soil excavation quantities based on the known depth to bedrock (which is relatively shallow, approximately 10 x 15 feet) and known aerial extent of contamination which has been already documented within the 1998, 2004, and 2006 reports.

(ii) defining the extent of the groundwater plume.

Over the course of three field investigation events which included monitoring well installation, it became evident that the groundwater plume is defined to a narrow aerial extent extending from the former Magna Metals building area to the steep slope where overburden is terminated. The plume extends along the leach pit system, as expected, as these structures apparently discharged directly, or through a series of pipes into the overburden. No evidence of off-site overburden or

off-site bedrock groundwater contamination was found. The aerial limit of the groundwater plume appeared to be limited to the site property.

(iii) ensuring all underground structures have been located.

After extensive investigation efforts involving two ground cover clearing events, two geophysical studies, a soil boring program, and mechanical/hand dig excavation effort, 13 leach pits/tanks were located in what appeared to be two historic phases of leach pit construction at the site. Interconnections between the pits were hand excavated and significant understanding of their historic operation was derived from the investigation efforts. The actual number of pits were significantly more than identified in historic NYSDEC and WCHD archival materials. As part of the FS alternative, all soils will be removed surrounding the pit area. A figure detailing the soil removal "box" will be presented in the FS based on the leach pit configuration, as previously shown on Figure 2-2 and the known depth to bedrock. The soil removal look will include the leach pit area, and soils on the slope surface as data indicated that the surface soils adjacent to the leach pit and down the slope had exceedances. The alternative will also include following all piping emanating from the pit, even beyond the "box" to fully ensure that soil remediation will be effective. As discussed in (i), the FS alternatives will also include soils beneath the former Magna Metals building floor.

(iv) fully delineating the nature and extent of soil contamination.

Subsurface soils and surface soils have been delineated. As discussed in (i) and (iii) contaminated soils will be included in the FS alternatives for removal. The horizontal extent of subsurface and surface soil contamination is essentially aligned with the leach pit configuration. The bedrock, which is relatively shallow, will be used in the FS alternative, as the bottom for soil excavation depths. The FS alternatives will include post-excavation confirmatory sampling.

(v) collecting additional sediment data points for ecological conformation of PRGs.

The data demonstrated that impacts to plagic and benthic acquatic life were observed. Both surface water and sediment are primary environmental media of concern. Although the ecological studies did derive site-specific preliminary remedial goals, the FS will also include an alternative that will result in pre-release conditions and an alternative to remediate to the Lowest Effort Level (LEL) concentrations for metals at all impacted areas.

The Remedial Investigation is now determined complete. Sufficient data exists to update the FS portion of the 1998 RI/FS. A new Feasibility Study will be prepared and submitted in the Fall of 2007. The Feasibility Study will contain evaluation of various remedial options and considerations as well as estimated costs. In addition, the FS options for remedial action will denote aerial extent of soil and sediment removal on isopleth maps to better define the FS alternative removal box.

In order to address the soil vapor investigation findings, an indoor air and subslab vapor feasibility study will be prepared to address subslab vapor mitigation and to prevent potential future vapor intrusion at the site.